

CLAIMS

1. A mutant of *Lactococcus lactis* spp. *lactis*, which produces lactate at high volumetric and specific productivity as well as high amounts of lactate dehydrogenase.

5 2. A mutant according to claim 1, which has a volumetric productivity of at least twice that of the *Lactococcus lactis* spp. *lactis* 19435.

3. A mutant according to claim 1, which has a specific productivity of at least 1.5 times that of the *Lactococcus lactis* spp. *lactis* 19435.

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4. A mutant according to claim 1, which has a production of lactate dehydrogenase of at least twenty times that of the *Lactococcus lactis* spp. *lactis* 19435.

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5. A mutant according to claims 1-4, denoted TMB5003, deposited at Deutsche Sammlung von Microorganismen und Zellkulturen under deposition number DSM 14489.

6. The use of *Lactococcus lactis* spp. *lactis* TMB5003 in the production of lactate.

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7. The use of *Lactococcus lactis* spp. *lactis* TMB5003 for the production of the enzyme lactate dehydrogenase, LDH, in particular L-lactate dehydrogenase, L-LDH.

8. Method for the production of lactate on a glucose containing medium, wherein an inoculum of *Lactococcus lactis* spp. *lactis* TMB5003 is grown on a medium comprising glucose as carbon source.

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9. Method according to claim 8, wherein the growth is carried at conditions optimised for production of L-lactate.

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10. Method according to claims 8-9, wherein the growth is continuous at a dilution rate of at least 0.5 h^{-1} .

11. Method according to claim 10, wherein the growth is continuous at a dilution rate of at least 0.7 h^{-1} .

12. Method according to claim 11, wherein the growth is continuous at a dilution rate of at least 0.8 h^{-1} .

5 13. Method according to claims 8-12, wherein the growth is carried out at unrestricted feed of glucose.

14. Method according to claims 8-13, wherein the growth is carried out at a pH of above 6, preferably pH 6-7.

10 15. Method according to claims 8-14, wherein the growth is carried out at a temperature of between 25 and 30 °C, preferably 27.5 to 30°C.

16. The use of lactate produced by fermenting the mutant *Lactococcus lactis* spp. *lactis* TMB5003 in food and as a chemical commodity in general.